Committee on Investment, Industry and Regional Development
Wednesday 27 July 2022
Inquiry into technology and the agriculture and mining sectors.

Response to question taken on notice

Mr CLAYTON BARR:
A final question that I would like to ask. Tailings and waste that is currently stuck on site — what are we doing in terms of technology and advanced technologies to better deal with what currently is a waste product sitting there?

ANDREW ABBEY:
I know there are programs looking at the beneficial reuse of tailings and ultimately being used as fill on sites. I can't give you exact examples and I don't want to mislead you or say something incorrect, and I am happy to take that on notice, but I do know there are programs, predominantly university- led programs, in terms of reuse of tailings so it isn't just a waste product and it can be beneficially re-used. But I can take that on notice and speak to the various companies and get you some examples.

Response:
The NSW Government and industry are actively investigating the viability and opportunities associated with by-products and tailings reprocessing.

Investigating opportunities around by-products of existing processes would have the benefit of reducing the volume of tailings in the first instance, whilst tailings reprocessing may present opportunities to reduce the volume of existing tailings facilities.

The NSW Critical Minerals and High Tech Metals Strategy includes the following references:

- *Additional opportunities for cobalt in NSW could include the reprocessing of mine tailings* (pg 12)
- *Based on drill core samples and historical company records, it is believed that many base and precious metal mines of NSW have processed ores that contain critical minerals. However, because of technology limitations and market conditions, these critical minerals have not been extracted. This presents further opportunities for investment into upgrades at current mines or using historical drill core samples to identify tailings deposits which could be commercially re-processed to extract critical minerals* (pg 14)
- *A good example of an existing mine developing a new opportunity is at the world-class Cadia gold and copper operations in the Central West of NSW. Newcrest is in the process of commissioning Australia's first molybdenum extraction plant. Associated with mine expansions at Cadia, the molybdenum will be extracted by further processing of the copper concentrate* (pg 14). Further information on the Newcrest project can be found at: Holy Moly(bdenum) | Newcrest

- *planning for future innovation, including setting aside infrastructure and space for trialing processes of tailings to make downstream processing of 'problem' wastes more economically viable.* (pg 19)
- *drive discovery of new critical minerals resources by investigating the potential for processing of tailings from legacy mines, fly ash dams, mine dumps and tailings facilities,including sample testing and characterisation in partnership with Geoscience Australia.* (pg 20)

The Commonwealth Government also actively investigates opportunities around tailings minimisation and reuse, including the 2016 publication *Tailings Management, Leading Practice Sustainable Development Program for the Mining Industry*[1].

This publication includes a section on tailings minimisation, reprocessing and reuse, which notes potential reuse opportunities to use some tailings for industrial or environmental purposes, thus reducing the storage requirement, including:

- *the finer portions of fly-ash used as a pozzolan in the manufacture of cements*
- *power station bottom ash used as inert building fill*
- *red mud from the alumina industry used as a soil conditioner and to clean polluted water streams*
- *power station ash used to fill coal mining voids*
- *coal tailings used as a low-grade fuel*
- *some tailings used as a construction material (for example, for upstream raises of TSFs)*

These investigations are in addition to the range of university led programs, some of which were identified in submissions to the Inquiry.

[1] https://www.industry.gov.au/sites/default/files/2019-04/lpsdp-tailings-management-handbook-english.pdf